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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/734,173	12/15/2003	Yong Jin Cho	3449-0271P	2128

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EXAMINER

SCHECHTER, ANDREW M

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 04/18/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/734,173

Applicant(s)

CHO ET AL.

Examiner

Andrew Schechter

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 December 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 13-21 is/are allowed.
- 6) ☒ Claim(s) 1-4, 6-10 and 12 is/are rejected.
- 7) ☒ Claim(s) 5 and 11 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Specification

1. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: "Liquid crystal display having green TFT in blue pixel region".

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Huh et al.*, U.S. Patent No. 6,307,216 in view of *Yang*, U.S. Patent No. 4,855,724.

Regarding claim 8, *Huh* discloses [see Fig. 1] a structure for a liquid crystal display comprising plural pixel regions [the examiner considers a single pixel region to be the rectangular area between data lines 300 horizontally and between gate lines 120 vertically] and plural TFTs [200, etc.], wherein the TFT for driving each pixel electrode is formed on a portion of the pixel region vertically below the pixel region associated with the pixel electrode.

Huh does not disclose the pixel regions including blue, green, and red pixel regions [*Huh* is silent on color filters in general]. *Yang* discloses [see Fig. 4] an analogous LCD having pixel regions including blue, green, and red pixel regions. It would have been obvious to one of ordinary skill in the art at the time of the invention to have blue, green, and red pixel regions, in order to produce a full-color LCD, and also to have the colors in the arrangement given by *Yang*, motivated by *Yang's* teaching that this arrangement allows a color pixel to be formed using two optical bodies which are adjacent in a row and a third in a row adjacent that one and in one of the two columns; *Yang* describes why this is advantageous [cols. 1-3]. This arrangement has blue pixels below green pixels, so using this arrangement in the device of *Huh* results in a device which has blue, green, and red pixel regions and the TFTs for driving green pixel electrodes are formed on a portion of the blue pixel regions. Claim 8 is therefore unpatentable.

There are electrode lead lines [320] extending from the green pixel electrodes in the green pixel regions to the blue pixel regions, so claim 9 is also unpatentable.

4. Claims 1-3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Huh et al.*, U.S. Patent No. 6,307,216 in view of *Yang*, U.S. Patent No. 4,855,724 as applied to claims 8 and 9 above, and further in view of *Won*, U.S. Patent No. 5,400,157.

Regarding claim 1, *Huh* in view of *Yang* has a second substrate having red, green, and blue pixel regions respectively having red, green, and blue pixel electrodes [400], TFTs [200, etc.], gate [120] and data [300] lines formed between the pixel

regions, wherein the TFTs for driving the green pixel electrodes are formed in the blue pixel regions, and a liquid crystal layer disposed between substrates. *Huh* in view of *Yang* does not explicitly disclose the first substrate including a color filter having red, green, and blue filters and a black matrix disposed between them.

Won discloses such a first substrate [1] including a color filter having red, green, and blue filters [3, 4, 5] and a black matrix [2] disposed between them. It would have been obvious to one of ordinary skill in the art at the time of the invention to use such a color filter substrate, motivated by the desire to produce a full-color LCD and block light between the pixel regions (color filter regions) from reaching the viewer, thereby improving the display quality. Claim 1 is therefore unpatentable.

The filters respectively correspond to the pixel regions, so claim 2 is also unpatentable. There are electrode lead lines [320] extending from the green pixel electrodes to the TFTs formed in the blue pixel regions for driving the green pixel electrodes, so claim 3 is also unpatentable. The TFTs for driving the green pixel electrodes are disposed adjacent to intersecting points of the gate lines and the data lines [see Fig. 1 of *Huh*], so claim 7 is also unpatentable.

5. Claims 4 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over either *Huh* in view of *Yang* in view of *Won* as applied to claim 1 above, or *Huh* in view of *Yang* as applied to claim 8 above, and further in view of *Greene et al.*, U.S. Patent No. 6,496,238.

The references cited may or may not teach having identical capacity (understood to mean electrical capacitance) in the pixel regions. *Greene* does teach having each

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pixel region have an identical capacitance [col. 18, lines 41-48]. It would have been obvious to one of ordinary skill in the art at the time of the invention to do so, motivated by *Greene's* teaching that this suppresses pixel drive voltage level and waveform variations to a degree that they are no longer visible [col. 18, lines 20-29]. Claims 4 and 10 are therefore unpatentable.

6. Claims 6 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over either *Huh* in view of *Yang* in view of *Won* as applied to claim 1 above, or *Huh* in view of *Yang* as applied to claim 8 above, and further in view of *Oh*, U.S. Patent No. 5,694,185.

The references cited do not teach TFTs with L-shaped channels. *Oh* does teach using an L-shaped channel [see Fig. 3]. It would have been obvious to one of ordinary skill in the art at the time of the invention to use an L-shaped channel in the above device, motivated by *Oh's* teaching that by doing so the channel length can be increased, so the physical size of the source electrodes can be reduced while maintaining the same current flow, which helps improve aperture ratio and display quality. Claims 6 and 12 are therefore unpatentable.

Allowable Subject Matter

7. Claims 5 and 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. Claims 13-21 are allowed.

9. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not disclose the device of claim 5 or of claim 11, in particular the additional limitation that a width of the gate lines adjacent to the blue pixel regions is greater than that of the gate lines adjacent to other pixel regions. Claims 5 and 11 would therefore be allowable if rewritten appropriately.

The prior art does not disclose the device of claim 13, in particular the limitation that there are TFTs for driving the blue and green pixel electrodes, all of which are formed in the blue pixel regions. Claim 13 is therefore allowed, as are its dependent claims 14 and 15.

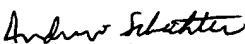
The prior art does not disclose the device of claim 16, in particular the limitation that the first and second switching devices (for driving the first and second pixel regions, respectively) are provided in the first pixel region. Claim 16 is therefore allowed, as are its dependent claims 17-21.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (571) 272-2302. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Andrew Schechter
Patent Examiner
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12 April 2005